

# Brazil

Type: Large Market; Large Market Share

Brazil is Latin America's largest renewable energy market. Despite its stagnant economic growth, ITA expects continued investment in wind, solar, and hydropower capacity growth into the future. However, substantial import barriers often make the market complicated and frustrating for American exporters. Exporters are expected to face strong headwinds from local content restrictions, but may find niche opportunities providing technologies not already manufactured locally.

## Sector Rankings

Geothermal  
N/A

Hydropower  
21

Solar  
21

Wind  
3

## Overall Rankings

Near-Term  
4

Mid-Term  
5

Despite flat economic growth, the reelection of President Rousseff portends a continuation of Brazil's renewable energy policy environment, which has facilitated near continuous investment in the sector across a broad range of subsectors. While wind and hydropower have been the source of Brazil's renewable energy expansion to date, ITA expects new solar development to begin in earnest, eventually rivaling new investment in wind power.

Were the Brazilian renewable energy market as open to U.S. exporters as other markets in the region, no country would support more U.S. exports. As it stands, Brazil ranks fourth on ITA's list of top projected export markets through 2016, falling one spot from last year's rankings. Most exports are the result of sheer volume; not significant increase in U.S. market share.

In 2014, renewable energy investment was catalyzed by one of the worst droughts in Brazilian history, which reduced power generation at some of its most important hydroelectric facilities and even stoked talk of power rationing and electricity rate hikes.<sup>1</sup> Higher prices would weaken economic growth in Brazil further, as consumer buying power is eroded.

The country's ongoing drought may even lead to electricity shortages in the near-term, potentially creating a market opportunity for distributed renewable energy providers, particularly roof-mounted solar PV. In the longer-term, the economic realities caused by the drought may shift the Brazilian Government's support towards renewables even further – a development further supported by low oil prices, which make investments in difficult to access reserves less likely.

## Overview of the Renewable Energy Market

While no specific legislative targets exist to drive demand for renewable energy generation, Brazil's "Ten Year Energy Plan" published in 2011 called for 18 GW of new capacity to come online by 2020. Under the plan, Brazil will maintain a significant large hydropower industry, which currently accounts for roughly 80 GW of the country's installed capacity. Other renewable energy sources, however, were set to grow faster on a percentage basis.<sup>2</sup>

In 2009, Brazil began a series of successful reverse auctions to govern and facilitate the deployment of renewable energy technologies. Through the reverse auction system, which has since been duplicated in other markets around the world, developers seeking to build renewable energy projects compete against proposed conventional energy projects in regular tenders. The auctions thus reduce the price paid by Brazilian consumers for renewable energy, as developers are incentivized to offer the lowest possible cost.

The focus on price competition traditionally limited opportunities for solar or other higher priced technologies, but in October 2014, Brazil tendered 889.6 MW of solar capacity through the reverse auction system for the first time. These projects are expected to come online in 2017.<sup>3</sup> As the cost of installing solar energy technologies continues to decline, future auctions will likely see more solar projects submitted.

For technology suppliers, the reverse auction system provides a long pipeline of planned and approved projects. Exporters and export promotion professionals

are encouraged to seek out auction winners to facilitate export sales. Based on previous auctions, ITA expects a total of 7 GW of wind power projects to be commissioned in 2014 and 2015, with 4.7 GW already awarded and due online in 2016 and beyond.

### **Challenges and Barriers to Renewable Energy Exports**

Exporters should compete well in Brazil given its proximity to the United States, but persistent local content requirements have restricted market access and catalyzed investment in local manufacturing. As a result, Brazil remains one of the most frustrating and complicated markets for U.S. renewable energy exporters. Its system of protectionist policies reduce the competitiveness of foreign technology suppliers; and its high import tariffs (14 percent for wind turbines and wind component parts; 12 percent for solar cells and modules) ensure that even if an export deal is obtainable, that U.S. suppliers can often be underbid by local suppliers.

The ability of local suppliers to underbid U.S. exporters is further eroded by the financing terms offered by Brazil's national development bank, Banco Nacional de Desenvolvimento Econômico e Social (BNDES). For most renewable technologies, project developers can technically use non-locally sourced equipment, but the use of foreign equipment makes them ineligible for low-cost BNDES loans. Almost all projects therefore use BNDES financing and are thus subject to the Bank's phased industrialization policy.

BNDES amended its local content requirements for wind projects in 2012, announcing that would require developers that utilize their financing to purchase all wind turbine components from Brazilian manufacturers by 2016. In August 2014, BNDES announced similar plans for the solar industry. For crystalline silicon PV panels, the roadmap includes three phases and ends with all cell produced locally by 2020. For thin-film, the plan has only two phases that end in 2018 with all module assembly and cell definition done in Brazil.

While no solar manufacturer has announced plans to manufacture in Brazil, several have acknowledged an interest in manufacturing locally. According to industry sources, 500 MW of capacity must be contracted annually via Brazil's reverse auction system to justify investments in new manufacturing facilities; 880 MW was announced in the first-ever auction that included solar with larger capacity installations likely in the

future.<sup>4</sup> As such, we expect PV suppliers to manufacture in Brazil soon, limiting export opportunities in the medium-term to component parts and materials, particularly for those manufacturers that have deep supply chains in the United States. In other instances, Brazilian firms may seek to license U.S. technology directly.

Importantly, BNDES published its investment plan for the next four years in December 2014. In it, the Bank acknowledged that there may be cuts to money transfers from the Brazilian Treasury to its budget, potentially making BNDES financing more difficult to secure.<sup>5</sup> Capital markets might therefore need to play a larger role in the Brazilian market, potentially creating an opportunity for U.S. exporters to sell to projects not supported by BNDES and thus without local content restrictions.

### **Opportunities for U.S. Companies**

Through 2020, ITA expects U.S. exports to Brazil to result from sheer market volume, as opposed to distinct U.S. competitiveness. Nevertheless, exporters should be able to find niche opportunities, particularly with the help of U.S. export promotion professionals.

#### Solar

Today, Brazil has almost no solar capacity installed, although growth is anticipated, particularly in the medium-term (post 2016). By 2023, Brazil expects to have 3.5 GW of solar capacity online. According to BNDES's investment plan, it will invest \$2.5 billion in solar development through 2018.

For U.S. exporters, the opportunity is now – and will likely diminish over time. Through 2017, BNDES's local content requirements mandate that solar modules be assembled in Brazil, but cells and other equipment can be imported.<sup>6</sup> While this will change as LCR mandates intensify, U.S. exports should find some opportunities in the short-term. As Brazil does not currently have a completed solar supply chain in-country, imports will be required.<sup>7</sup>

Polysilicon producers, wafer manufacturing, and solar cell providers should all find opportunities. Solar project developers and other service providers may find more lasting opportunities, as the market expands over the remainder of the decade.

### Wind

Wind capacity in Brazil – already the largest in Latin America – should continue to buttress renewable energy growth for the foreseeable future. Brazil enjoys one of the world’s strongest wind resource bases; and with wind energy expected to reach grid parity in the near future, even more investment is all-but-certain. According to the Brazilian Government’s Energy Research Agency, the wind industry will need to install 17 GW of new wind capacity over the next decade to meet the country’s target of 22.4 GW of capacity by 2023.<sup>8</sup>

Based on ITA’s projections, Brazil should account for roughly 15 percent of all wind exports from the United States through 2016, ranking it third on ITA’s list of top export markets over the near-term. Wind service providers should find the most opportunities since LCRs and other import barriers will reduce the competitiveness of component suppliers. Resource mapping, turbine design, environmental impact

assessments, and other consultancy services are likely to be in high demand and should offer opportunities for U.S. companies.

### Hydropower

ITA also expects some export opportunities to result from changes in Brazil’s hydropower market. The lack of production from some of Brazil’s largest hydropower dams, because of ongoing draught, has made the market captive to the expertise of engineering firms that can increase capacity through technological services. U.S. firms should also benefit from increased development of small hydropower plants, where U.S. technology is often highly competitive.



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